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Asthma in New Jersey

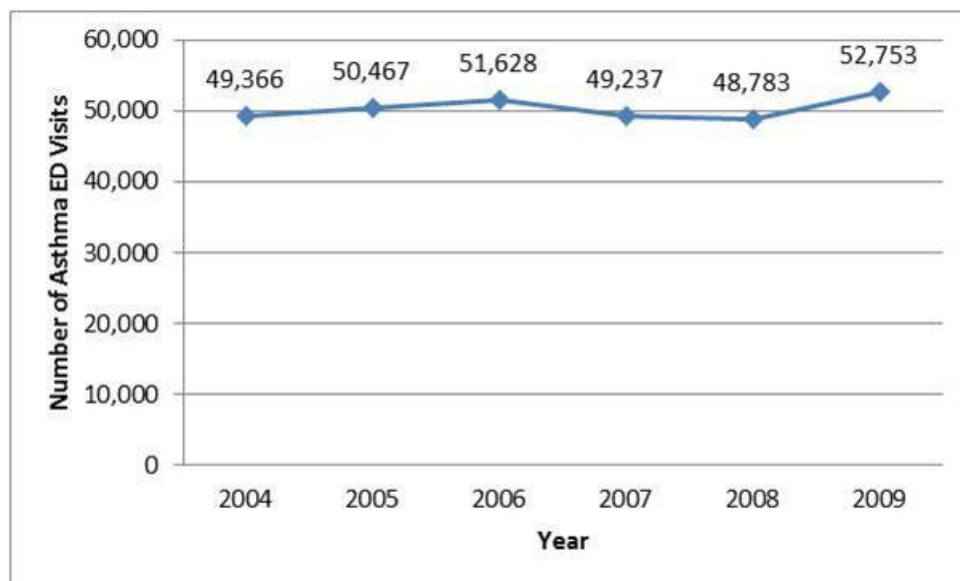
Chapter 5: Emergency Department Visits

With appropriate management, asthma can be controlled so that most visits to the emergency department (ED) are avoided. The New Jersey Department of Health and Senior Services' (NJDHSS) Asthma Awareness and Education Program (AAEP) monitors asthma ED visits using billing records that are collected and maintained by the Department's Office of Health Care Quality Assessment. Since 2004, emergency department discharge data has been collected in New Jersey through Uniform Bill (UB) patient summaries submitted by all general acute care hospitals in the state. It should be noted that ED records are collected for billing rather than clinical purposes and that the information presented does not represent visits occurring at non-acute, specialized, or out of state facilities. ED visits may include multiple events for the same person. Non-resident ED visits and ED visits that result in admission to the hospital are excluded from this analysis.

In this report, an asthma ED visit is defined as a discharge from the ED with a primary diagnosis in the ICD-9 code range 493.0-493.9.

Figure 1

Number of Asthma ED Visits, New Jersey, 2004-2009

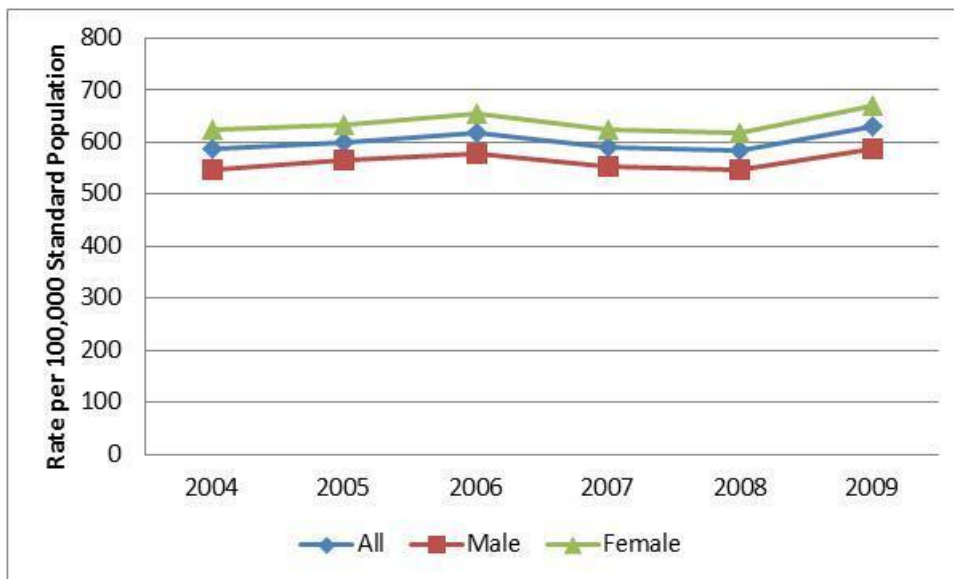


Data Source – 2004-2009 New Jersey ED Discharge File

The total number of asthma ED visits per year ranged from 49,237 to 52,753 during 2004-2009.

Figure 2

**Age-Adjusted* Asthma ED Visit Rate,
New Jersey, 2004-2009**

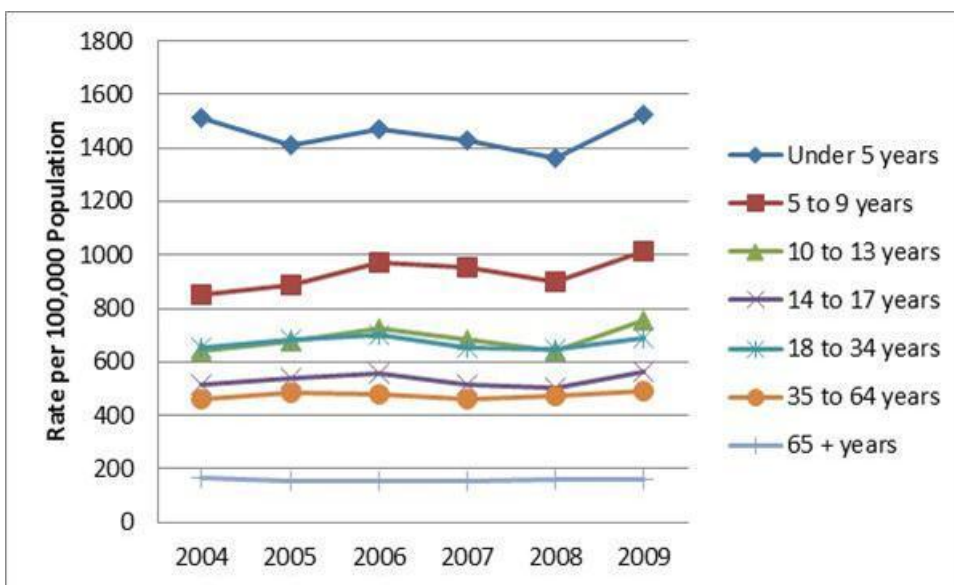


*Direct method of age-adjustment using the 2000 U.S. standard population
Data Source – 2004-2009 New Jersey ED Discharge File
Population Source – Estimates of Resident Population for New Jersey 2004-2009

The annual age-adjusted asthma ED visit rate increased somewhat from 2004-2009.

Figure 3

**Asthma ED Visit Rate by Age Group,
New Jersey, 2004-2009**

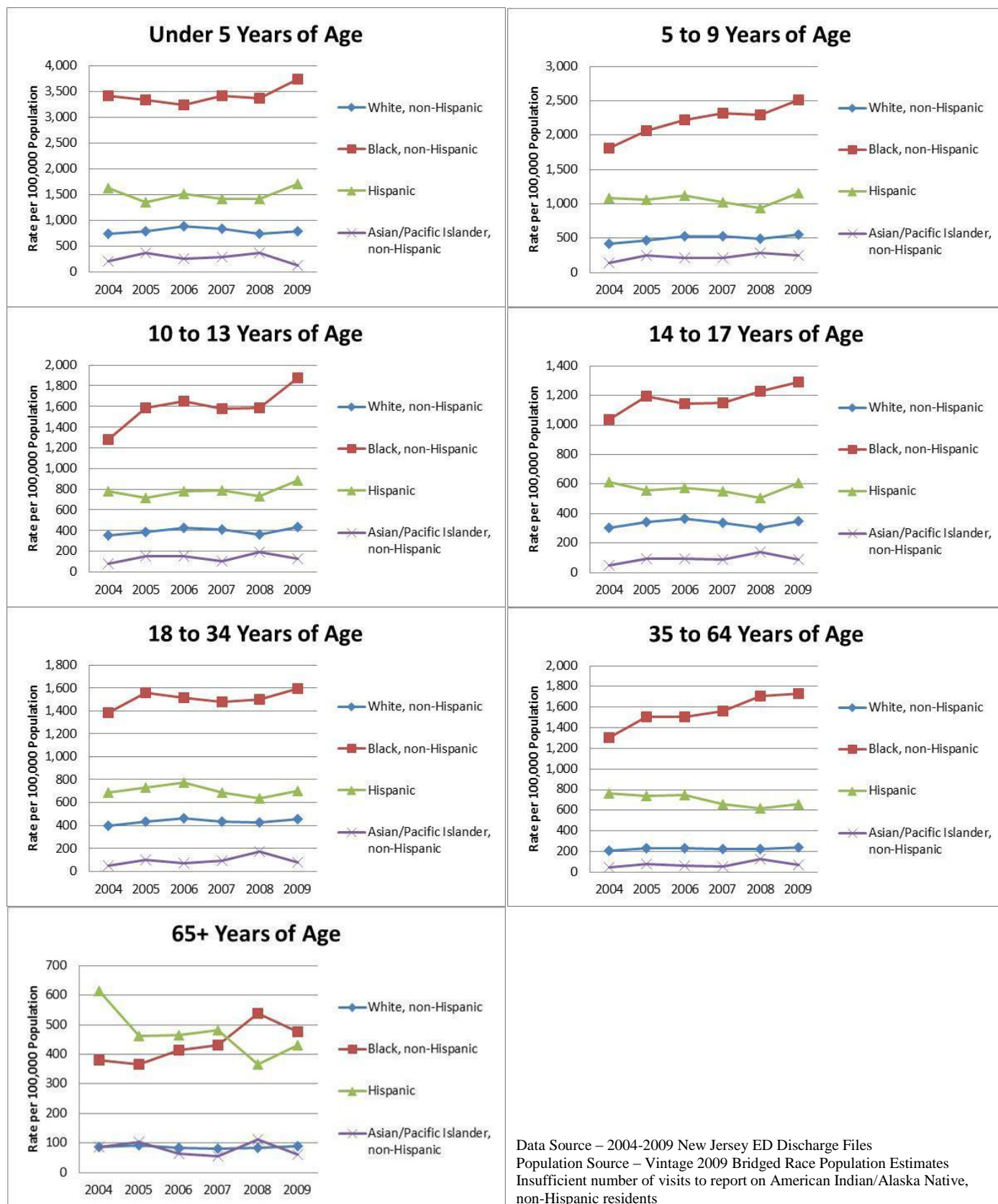


Data Source – 2004-2009 New Jersey ED Discharge File
Population Source – Estimates of Resident Population for New Jersey 2004-2009

From 2004 to 2009, the asthma ED visit rate for children 5 to 9 years of age increased by about 19% overall and the rate for children 10 to 13 years of age increased by about 18% overall.

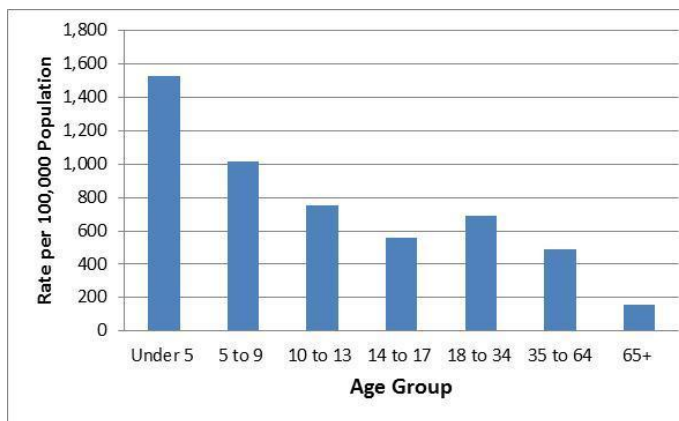
Figure 4

Asthma ED Visit Rate by Age Group and Race/Ethnicity, New Jersey, 2004-2009



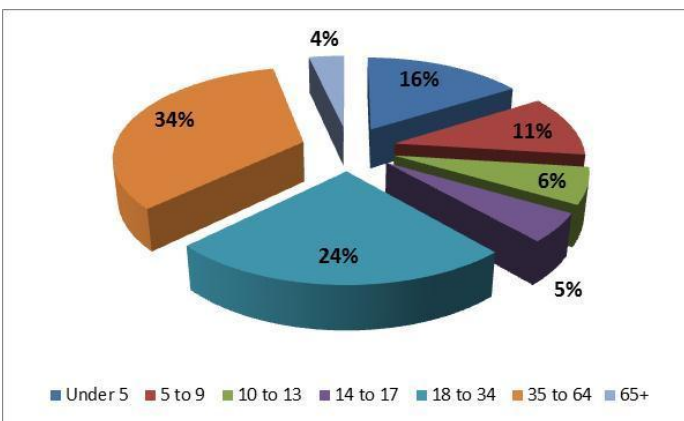
From 2004-2009, the asthma ED visit rate for black, non-Hispanic residents *increased* overall across all age groups.

Figure 5a
Asthma ED Visit Rates by Age Group
New Jersey, 2009



Data Source – 2009 New Jersey ED Discharge File
Population Source – 2009 Annual Population Estimates

Figure 5b
Distribution of Asthma ED visits
by Age Group, New Jersey, 2009



Data Source – 2009 New Jersey ED Discharge File
Population Source – 2009 Annual Population Estimates

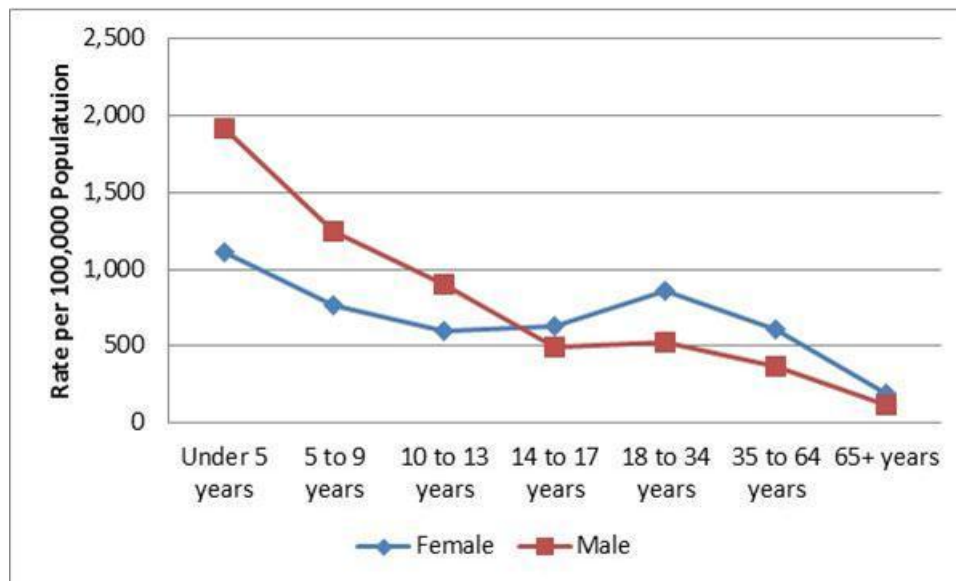
Table 1		
Asthma ED Visits by Age Group, New Jersey, 2009		
Age Group	Number of Asthma ED visits	Rate per 100,000 Population
Under 5	8,469	1,525
5 – 9	5,764	1,014
10 – 13	3,388	754
14 – 17	2,649	560
18 – 34	12,857	689
35 – 64	17,759	490
65+	1,867	159
Total	52,753	606

Data Source – 2009 New Jersey ED Discharge File
Population Source – 2009 Annual Population Estimates

In 2009, a total of 52,753 asthma emergency department visits occurred among New Jersey residents representing nearly 2% of all resident ED visits in the state. The highest asthma ED visit rate by age was for children under five years. In 2009 alone, preschool aged residents experienced 8,469 ED visits for asthma. The lowest asthma ED visit rate by age was for residents 65 years and older. Although preschool children experienced the highest ED visit rate for asthma, the greatest number of asthma ED visits in 2009 actually occurred among residents 35-64 years (17,759). About 34% of all asthma ED visits in 2009 involved residents who were between 35-64 years of age.

Figure 6

**Asthma ED Visit Rate by Gender and Age Group,
New Jersey, 2009**



Data Source – 2009 New Jersey ED Discharge File

Population Source – 2009 Annual Population Estimates

Table 2				
Asthma ED Visits by Gender and Age Group, New Jersey, 2009				
	Females		Males	
<i>Age Group</i>	Number of Asthma ED Visits	Rate per 100,000 Population	Number of Asthma ED Visits	Rate per 100,000 Population
Under 5	3,025	1,115	5,444	1,918
5 to 9	2,134	770	3,630	1,246
10 to 13	1,313	599	2,075	902
14 to 17	1,451	630	1,198	494
18 to 34	7,832	862	5,025	525
35 to 64	11,134	604	6,625	373
65 +	1,309	190	558	115
Total	28,198	635*	24,555	575*

Data Source – 2009 New Jersey ED Discharge File

Population Source – 2009 Annual Population Estimates

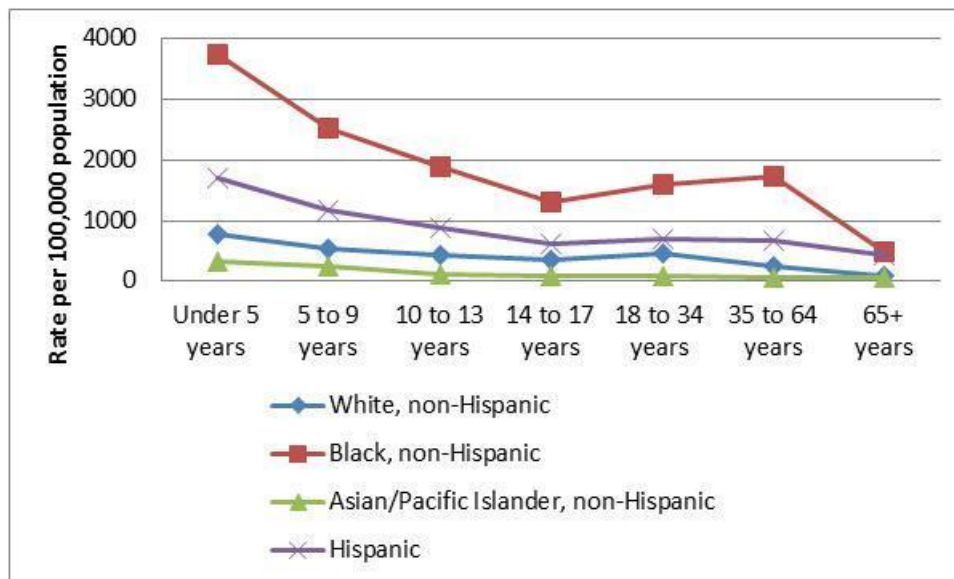
*Rates should be compared cautiously since they are not age-adjusted

The relationship between asthma ED visits and gender varies by age group. Among children, a greater number of boys visited the ED for asthma when compared to girls in 2009. However, among adults more women visited the ED for asthma as compared to men in that same year. The asthma ED visit rate for boys under 5 years of age was about 1.7 times higher than that of girls under 5 years of age. This male-female rate difference became smaller with increasing age until about 14-17 years of age when the rate became higher for females. Females had a higher crude asthma ED visit rate when compared to males (635 versus 575 asthma ED visits per 100,000 population) and females also had a higher age-adjusted

asthma ED visit rate when compared to males (670 versus 588 asthma ED visits per 100,000 standard population).

Figure 7

**Asthma ED Visit Rate by Race/Ethnicity
and Age Group, New Jersey, 2009**



Insufficient number of ED visits for American Indian/Alaska Native, non-Hispanic

Data Source – 2009 New Jersey ED Discharge File

Population Source – Vintage 2009 Bridged Race Population Estimates

Table 3										
Asthma ED Visits by Race/Ethnicity and Age Group, New Jersey, 2009										
	White, non-Hispanic		Black, non-Hispanic		Asian/Pacific Islander, non-Hispanic		American Indian/Alaska Native, non-Hispanic		Hispanic	
Age Group	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Under 5	2,113	780	3,119	3,731	172	327	13	1,238	2,507	1,704
5 to 9	1,675	550	2,117	2,516	130	250	24	2,044	1,471	1,160
10 to 13	1,117	430	1,296	1,874	46	127	7	742	733	882
14 to 17	967	350	991	1,293	31	91	**	**	518	609
18 to 34	4,552	455	4,728	1,592	133	79	21	504	2,780	701
35 to 64	5,630	239	7,800	1,732	214	73	45	637	3,423	661
65 +	805	89	538	476	34	60	**	**	416	430
Total	16,859	314*	20,589	1,754*	760	109*	118	685*	11,848	816*

N = Number of asthma ED visits

Rate = Number of asthma ED visits per 100,000 population

*Rates should be compared cautiously since they are not age-adjusted

**Suppressed when the number of visits is less than 5 or when necessary to preserve confidentiality

2,218 asthma ED visits were reported with other race and non-Hispanic

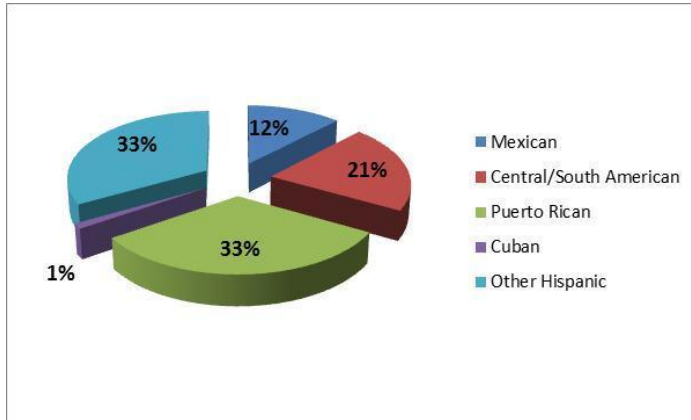
361 asthma ED visits were reported with unknown race and non-Hispanic

Data Source – 2009 New Jersey ED Discharge File

Population Source – Vintage 2009 Bridged Race Population Estimates

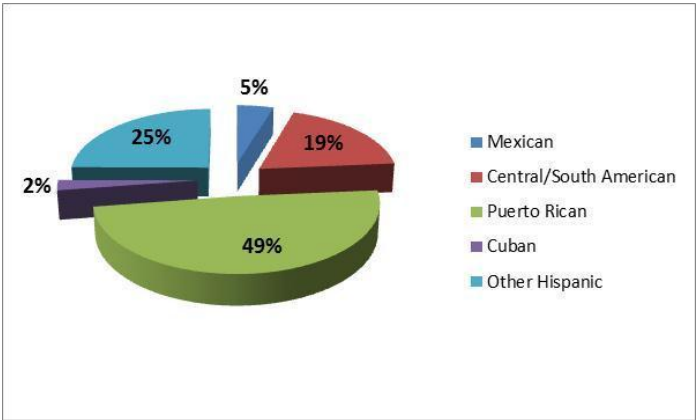
Among children, about 37% of asthma ED visits were black, non-Hispanic (7,523), about 29% were white, non-Hispanic (5,872), and about 26% were Hispanic (5,229). Among adults, about 40% of asthma ED visits were black, non-Hispanic (13,066), about 34% were white, non-Hispanic (10,987), and about 20% were Hispanic (6,619). In 2009, the asthma ED visit rate was highest for black, non-Hispanic residents and lowest for Asian/Pacific Islander, non-Hispanic residents across all age categories. The 2009 age-adjusted asthma ED visit rate was highest for black, non-Hispanic (1,722 per 100,000 standard population) followed by Hispanic (842 per 100,000 standard population), American Indian/Alaska Native, non-Hispanic (696 per 100,000 standard population), white, non-Hispanic (354 per 100,000 standard population), and Asian/Pacific Islander, non-Hispanic (109 per 100,000 standard population).

Figure 8a
Distribution of Asthma ED Visits Among
Hispanic Children by
Ethnic Origin, New Jersey, 2009



Data Source – 2009 New Jersey ED Discharge File
 Children includes residents less than 18 years of age

Figure 8b
Distribution of Asthma ED Visits Among
Hispanic Adults by
Ethnic Origin, New Jersey, 2009



Data Source – 2009 New Jersey ED Discharge File
 Adults include residents 18 years of age and older

Table 4				
Asthma ED Visits Among Hispanic Residents by Ethnic Origin, New Jersey, 2009				
	Children		Adults	
<i>Ethnic Origin</i>	N	Rate	N	Rate
Mexican	639	772	314	242
Central or South American	1,094	916	1,251	335
Puerto Rican	1,693	1,174	3,243	1,155
Cuban	67	396	163	225
Other Hispanic	1,736	2,203	1,648	1,068
Total	5,229	1,183	6,619	655

Rates should be compared cautiously since they are not age-adjusted

N = Number of asthma ED visits

Rate = Number of asthma ED visits per 100,000 population

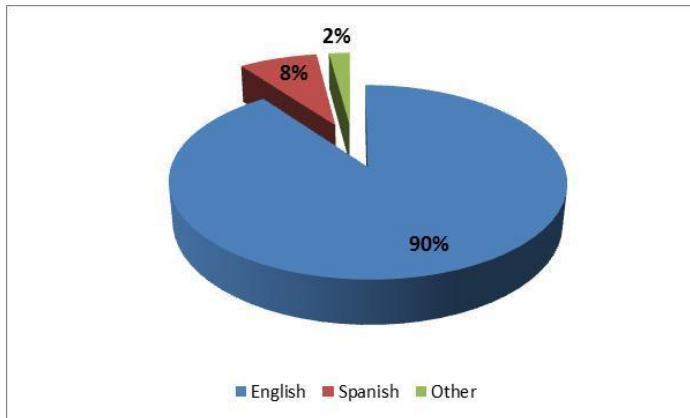
Data Source – 2009 New Jersey ED Discharge File

Population Source – 2009 American Community Survey

In 2009, the frequency and rate of asthma ED visits among Hispanic residents varied by ethnic origin. Among Hispanic children, the highest asthma ED visit rate was for Other Hispanic (2,203 per 100,000 population) followed by Puerto Rican (1,174 per 100,000 population), Central or South American (916 per 100,000 population), Mexican (772 per 100,000 population), and then Cuban (396 per 100,000 population). Among Hispanic adults, the highest asthma ED visit rate was for Puerto Rican, (1,155 per 100,000 population), followed by Other Hispanic (1,068 per 100,000 population), Central or South American (335 per 100,000 population), Mexican (242 per 100,000 population), and then Cuban (225 per 100,000 population).

Figure 9a

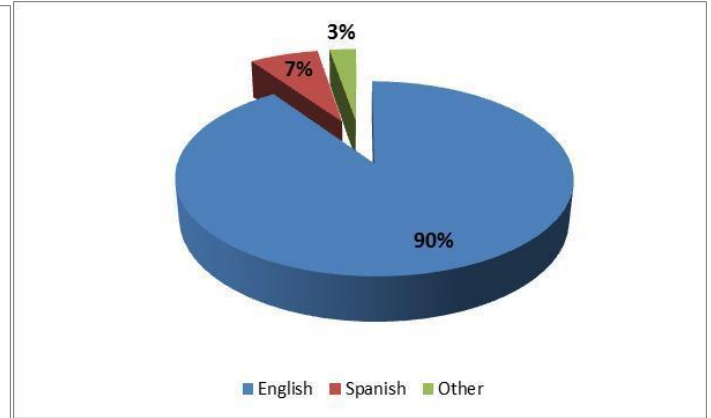
**Distribution of Pediatric Asthma ED visits
by Primary Language Spoken at Home,
New Jersey, 2009**



Data Source – 2009 New Jersey ED Discharge File
Pediatric includes residents less than 18 years of age

Figure 9b

**Distribution of Adult Asthma ED visits
by Primary Language Spoken at Home,
New Jersey, 2009**



Data Source – 2009 New Jersey ED Discharge File
Adult include residents 18 years of age and older

Spanish was noted as the primary language spoken at home for about 8% of pediatric and about 7% of adult asthma ED visits in 2009.

Table 5

Asthma ED Visits by Primary Payer, New Jersey, 2009

Primary Payer	Number of Asthma ED Visits	Percent of All Asthma ED Visits	Percent of Payer's Total Asthma ED Visits
HMO	17,508	33.2%	2.2%
Self-Pay/Indigent Care	12,387	23.5%	2.0%
Medicaid	8,940	16.9%	2.5%
Blue Cross	7,081	13.4%	1.7%
Medicare	3,599	6.8%	1.0%
Commercial	2,399	4.5%	1.8%
Other	839	1.6%	0.6%
Total	52,753	100%	1.9%

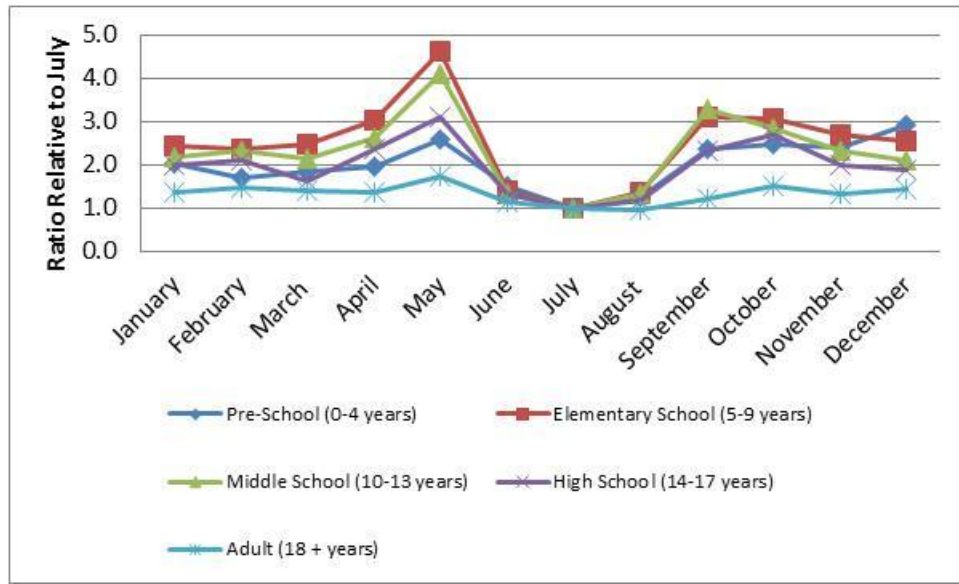
Data Source – 2009 New Jersey ED Discharge File

HMO was the most frequently noted primary payer for asthma ED visits in 2009 (17,508) followed by Self-Pay/Indigent Care (12,387) and Medicaid (8,940). Asthma ED visits represented about 2.5% of all resident Medicaid ED visits, 2.2% of all resident HMO ED visits, 2.0% of all resident self-pay/indigent care ED visits, 1.8% of all resident commercial ED visits, 1.7% of all resident Blue Cross ED visits, and 1.0% of all resident Medicare ED visits.

In Figures 10-11 and Table 6, asthma ED visits are reported by month of admission to show seasonal admission patterns. Note that in this section asthma ED visits are reported for the year 2008 because any 2009 ED visits with a discharge extending into the year 2010 would not be included in the 2009 annual discharge file.

Figure 10

**Asthma ED Visits by ED Admission Month
Relative to July by Age Group, New Jersey, 2008**



Data Source – 2008 and 2009 New Jersey ED Discharge Files

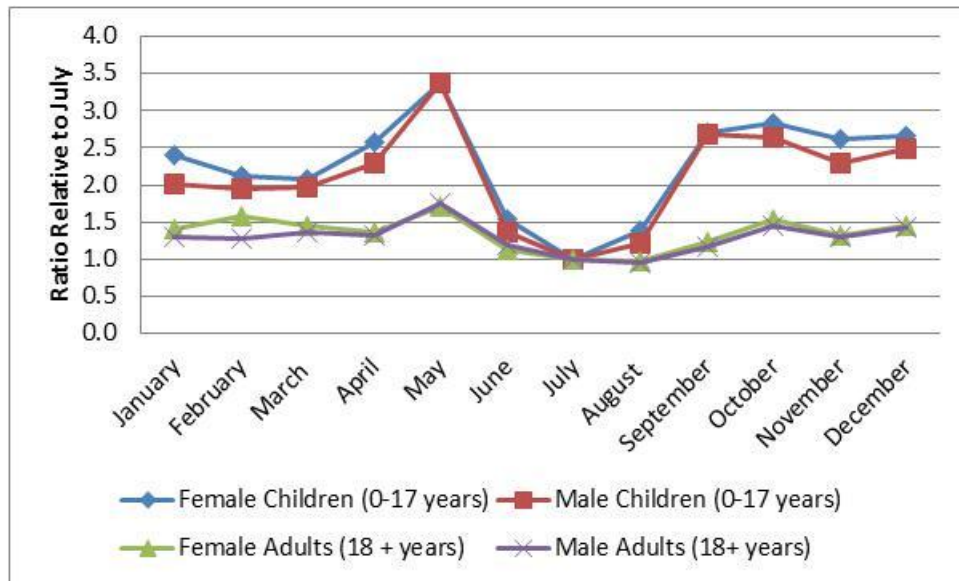
Table 6						
Asthma ED Visits by ED Admission Month and Age Group, New Jersey, 2008						
	Number of Admissions (Ratio Relative to July)					
Admission Month	Pre-School Aged (0-4 years)	Elementary School Aged (5-9 years)	Middle School Aged (10-13 years)	High School Aged (14-17 years)	Adult (18 + years)	All Ages
January	646 (2.0)	410 (2.5)	230 (2.2)	203 (2.0)	2,646 (1.4)	4,135 (1.6)
February	535 (1.7)	396 (2.4)	246 (2.3)	215 (2.1)	2,825 (1.5)	4,217 (1.6)
March	578 (1.8)	416 (2.5)	225 (2.1)	167 (1.6)	2,742 (1.4)	4,128 (1.6)
April	623 (2.0)	509 (3.0)	275 (2.6)	242 (2.4)	2,622 (1.4)	4,271 (1.6)
May	813 (2.6)	772 (4.6)	431 (4.1)	316 (3.1)	3,341 (1.7)	5,673 (2.2)
June	473 (1.5)	237 (1.4)	141 (1.3)	135 (1.3)	2,222 (1.1)	3,208 (1.2)
July	316 (1.0)	167 (1.0)	105 (1.0)	102 (1.0)	1,937 (1.0)	2,627 (1.0)
August	391 (1.2)	228 (1.4)	141 (1.3)	120 (1.2)	1,888 (1.0)	2,768 (1.1)
September	748 (2.4)	522 (3.1)	347 (3.3)	238 (2.3)	2,337 (1.2)	4,192 (1.6)
October	787 (2.5)	514 (3.1)	298 (2.8)	274 (2.7)	2,923 (1.5)	4,796 (1.8)
November	765 (2.4)	451 (2.7)	243 (2.3)	203 (2.0)	2,547 (1.3)	4,209 (1.6)
December	919 (2.9)	425 (2.5)	221 (2.1)	191 (1.9)	2,796 (1.4)	4,552 (1.7)

Data Source – 2008 and 2009 New Jersey ED Discharge Files

In 2008, the greatest number of asthma emergency department admissions overall occurred during the month of May (5,673) and the fewest number of asthma emergency department admissions occurred during the month of July (2,627). As a group, children experienced greater monthly fluctuations in the number of asthma ED visits when compared to adults. For example, the number of asthma ED admissions that occurred for elementary school age children (5-9 years) in May was about 4.6 times the number that occurred in July. The number of asthma ED admissions that occurred for elementary school age children (5-9 years) in September and October was about 3.1 times the number that occurred in July.

Figure 11

**Asthma ED Visits by Admission Month Relative to July
by Gender and Age Group, New Jersey, 2008**

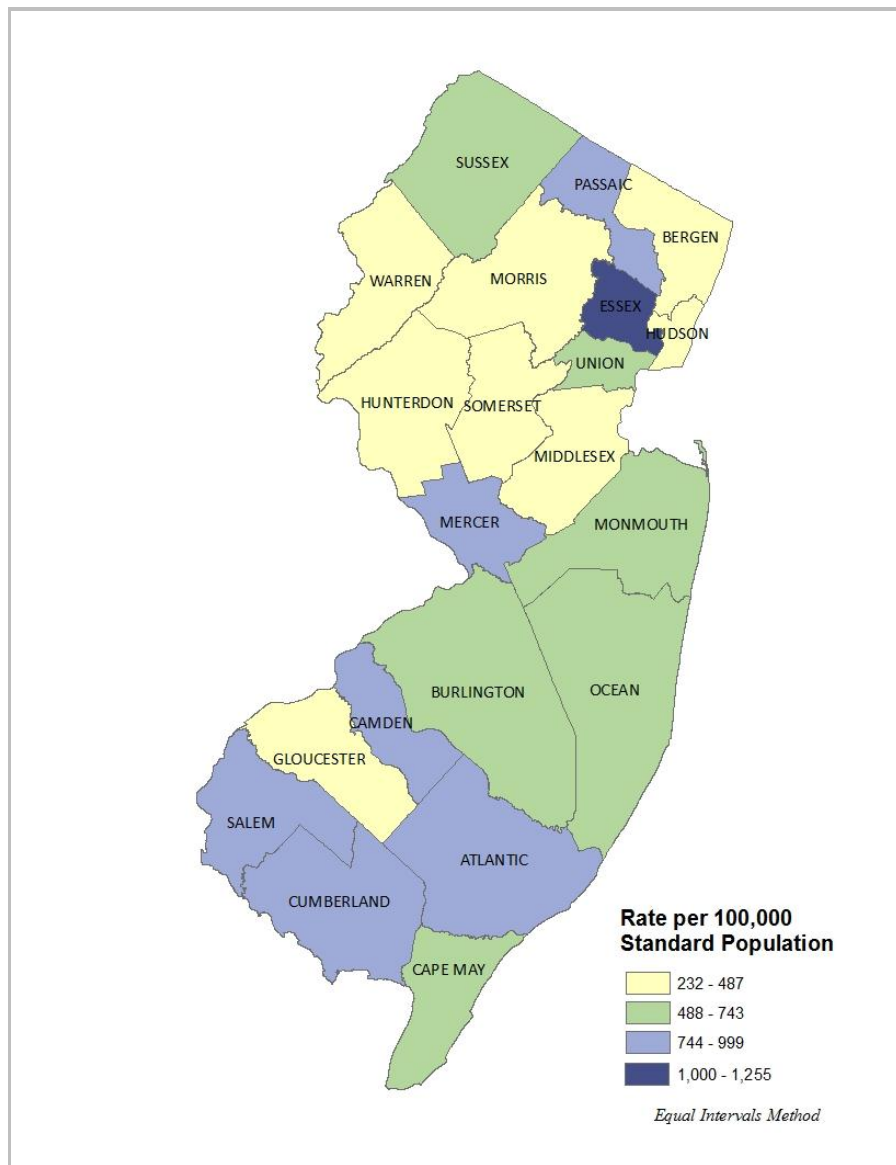


Data Source – 2008 and 2009 New Jersey ED Discharge Files

In 2008, both male and female children experienced an overall increase in asthma emergency department admissions during the fall and spring months. In contrast with asthma hospitalization trends, the ratio of asthma ED admissions relative to July did not appear to vary by gender among children. Seasonal trends in adult asthma ED admissions were less pronounced when compared to seasonal trends in childhood asthma ED admissions.

Figure 12

**Age-Adjusted* Asthma ED Visit Rate
by County of Residence, New Jersey, 2009**



*Direct method of age-adjustment using the 2000 U.S. standard population
Data Source – 2009 New Jersey ED Discharge File
Population Source – Vintage 2009 Bridged Race Population Estimates

Table 7				
Asthma ED Visits by County of Residence, New Jersey, 2009				
County	Number of Asthma ED Visits	Percent of Asthma ED Visits	Rate per 100,000 Population (Crude)	Rate per 100,000 Standard Population (Age-Adjusted)*
Atlantic	2,391	4.5%	880	923
Bergen	2,958	5.6%	330	359
Burlington	2,217	4.2%	497	537
Camden	4,693	8.9%	906	935
Cape May	382	0.7%	398	505
Cumberland	1,479	2.8%	938	945
Essex	9,656	18.3%	1,255	1,254
Gloucester	1,298	2.5%	448	469
Hudson	2,747	5.2%	459	473
Hunterdon	260	0.5%	200	232
Mercer	2,855	5.4%	780	801
Middlesex	3,665	6.9%	463	473
Monmouth	3,191	6.0%	495	536
Morris	1,691	3.2%	346	376
Ocean	2,677	5.1%	467	527
Passaic	4,489	8.5%	913	909
Salem	462	0.9%	696	749
Somerset	1,334	2.5%	408	424
Sussex	735	1.4%	486	534
Union	3,096	5.9%	588	596
Warren	477	0.9%	435	468

*Direct method of age-adjustment using the 2000 U.S. standard population

Data Source – 2009 New Jersey ED Discharge File

Population Source – Vintage 2009 Bridged Race Population Estimates

In 2009, the number of asthma ED visits and the asthma ED visit rate varied dramatically among the 21 counties of New Jersey. The 2009 age-adjusted asthma ED visit rate ranged from about 232 annual asthma ED visits per 100,000 standard population (Hunterdon County) to about 1,254 annual asthma ED visits per 100,000 standard population (Essex County). Considering all New Jersey resident asthma ED visits in 2009, about 18.3% (9,656) were for residents of Essex County while about 0.5% (260) were for residents of Hunterdon County. For comparison, about 8.8% of New Jersey residents were living in Essex County while about 1.5% of New Jersey residents were living in Hunterdon County during the same year.

Acronyms:

ED – Emergency Department

ICD – International Classification of Diseases

Definitions:

Age-Adjusted Rate – A hypothetical rate that facilitates comparison among populations that differ in underlying age structure. The age-adjusted rates presented here were calculated with the direct method of adjustment using the 2000 U.S. standard population.

ICD – “A coding system maintained by the World Health Organization and the U.S. National Center for Health Statistics used to classify causes of death on death certificates and diagnoses, injury causes, and medical procedures for hospital and ED visit visits. These codes are updated every decade or so to account for advances in medical technology.”¹

References:

1. New Jersey Center for Health Statistics. Definitions of Public Health Terms and Acronyms, Accessed January 20, 2011. Available : <http://www4.state.nj.us/dhss-shad/home/Glossary.html>

Acknowledgements:

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For more information about the NJ Asthma Awareness and Education Program:
www.nj.gov/health/asthma

For asthma resources from the Pediatric Adult Asthma Coalition of New Jersey (PACNJ):
www.pacnj.org

For more information about New Jersey ED Discharge Data:
<http://www.state.nj.us/health/healthcarequality/ub/ub92intro.shtml>

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